Why Asia Should Lead a Global Push to Eliminate Nuclear Weapons

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abstract

The purpose of this chapter is to explicate reasons why Asia is especially well positioned to lead a global push to eliminate, or greatly reduce, nuclear weapons inventories worldwide, and why Mongolia might be catalytic to that effort. The threat of any general, thermonuclear war is existential to civilization itself. No one understands that better than Japan. North and South Korea want to unify, but they cannot while they are clients of opposing major powers, China and the USA. Nuclear weapons complicate that tragically, at great expense and risk to everyone. Meanwhile, Pakistan is destabilizing, which scares everyone in South Asia and many worldwide, because of its long feud with nuclear-armed India, including four conventional wars. The risk that Pakistani nuclear explosives could find their way to Islamic terrorist groups terrifies others. Many analysts therefore consider South Asia the most likely place for a nuclear war to start today. Russia is a declining power, and is frightened by both NATO and a fast-rising China, while China has considerable capital it could devote to a noble, global cause like nuclear arms control. Israel is a wild card, which motivates Iran to be one too. The former has a complete nuclear triad, and Iran could build nuclear weapons over several years if allowed to. Meanwhile, the USA is paralyzed on this topic by our weapons industry (among other factors), and everyone who now possesses nuclear weapons is modernizing. Europe in general is quite alarmed by US abandonment of the Intermediate-Range Nuclear Arms Treaty (INF) [1] and by Russian threats to use "small" nuclear weapons in tactical situations. [2] Therefore, the EU would probably support any Asian effort to bring sanity to this situation before any more large wars get fought over their territories. No European nation wants to become a battleground for major powers fighting with nuclear weapons. At the end, we will discuss some solutions well aware that the countries that already possess nuclear weapons are extremely reluctant to eliminate, or even to limit them.

Existential Threats and the Law of Low Probabilities

Almost all educated people recognize that a general thermonuclear war would destroy human civilization itself, perhaps permanently. Nonetheless, some "experts" still toy with "smaller" scenarios of limited nuclear strikes. Why they think those "limited" nuclear conflicts would not escalate is somewhat mysterious. If worst-case scenarios came true, with nuclear winter, [3] deliberate distribution of radioactive materials, and even clandestine biological weapons, human survival itself could be at risk, not just civilization. Yet most of the current nuclear powers seem content to sleepwalk on, as though fear of nukes being used means that they will never be used.

Very few weapons created by people have 'never been used.' And very few nations at war surrender without using their most powerful weapons. Some accepted lesser defeats during Cold War proxy wars, however. The proxies always suffered most, and some lost millions killed. [4]

Watching that carnage, there are always other people who wish to join the "nuclear club." It buys respect and attention, no matter how immoral. Like Iran, ever threatened by Israel. [5] Iran threatens Israel too, so both have valid fears. But if Iran gets nuclear weapons, Saudi Arabia will surely want them too, and so on, and on. North Korea's recent testing prompts others to rethink their current bans on creating or using nuclear weapons, like Japan, South Korea and Taiwan.

One way or another all of these countries depend on a theory developed during the earliest days of nuclear crisis after World War II. This is called **deterrence theory**, and it was refined during the Cold War. But nuclear deterrence theory has a critical flaw, an embedded assumption called the "rational actor" assumption. [6] Simply put, this concludes that if total destruction of any nation were guaranteed, no matter how skillfully it conducted a secret "first strike" against its nuclear enemy(s), then no leader would ever order a first strike because leaders are **assumed** to be "rational." Hence the common acronym, "MAD" for Mutual Assured Destruction.

There is a critical difference here between the words "most" and "all." Yes, most national leaders appear to be "rational" most of the time. But a clear-eyed reading of history quickly reveals that not ALL leaders are ever rational, much less always. Even wise, moral, intelligent and clear-headed leaders can be injured, get disease (like brain tumors) and all of them get old (if they are lucky). Each of these factors can diminish "rationality" whatever that is. Furthermore, cultures differ much more than many people realize on what they regard to be "rational."

Crisis situations reduce the validity of the rational actor assumption more. In crises, people get tired, literally irritated, and are often confused. Information gets distorted, strange things happen, communications may scramble, computers can fail, radars can break, officers in the field can go rogue, and the "fog of war" can make even the simplest things hard to do or even to understand. All of these factors reduce the validity of the rational actor assumption during crises.

Finally, there are "third parties" in this world who would love to start a nuclear war between "great powers," which they see as mortal enemies. Some call them terrorists, but they do not. They call themselves freedom fighters or similar noble terms for people trying to protect their small nations or weak communities from ruthless others. One of the nightmare scenarios is for some terrorist group to acquire two nuclear warheads by any of many possible methods, then smuggle one into Moscow and the other into Washington D.C. to be set off simultaneously.

Should that happen, with launch on warning protocols, several hundred or even thousands of nuclear warheads could be heading toward targets minutes later, no matter how "rationally" the doomsday system was conceived and created. [7] A similar, smaller nightmare scenario requires only one nuclear explosive, delivered somehow to Tel Aviv. 20 Islamic capitals could light up 30 minutes later if the Israelis were not restrained in response, which few analysts expect.

This brings us to the law of low probabilities. Gamblers know that even very rare events often occur eventually if they are possible. Like winning a lottery despite multi-million odds against any individual winning one. Someone always does win, eventually. Or getting hit by lightning

despite million to one odds against. Dozens do each year. Mathematician Siméon Denis Poisson figured out some relationships between the probability of a rare event, and time for it to occur. [8]

For one concrete example (since this is not a math paper) **IF** the probability of a triggering event that would set off a general nuclear war is 1 percent per year, the half-life of human civilization is approximately 69 years. That is, if the annual risk is 1 percent, over 69 years the probability of the war erupting would be 50 percent (counterintuitive, but true). If the rare event did not occur, the probability of it occurring during the next 69 years would also be 50 percent, making the statistical odds of the war occurring over 138 years = 75 percent. That rises the more years one takes that risk, asymptoting to a probability of 99.99999 percent that the rare event will occur. The practical point is that if you wait long enough, the rare event will almost certainly happen.

Realizing this, some of the brighter minds that helped create deterrence theory, and/or implement its weapons and doctrines (like Henry Kissinger, George Schultz, William Perry and Sam Nunn) have advocated in recent years getting rid of ALL nuclear weapons. [9] Having stumbled into the nuclear arms race with the Soviet/Russians with the best of intentions, then having dodged close calls like the Cuban Missile Crisis of 1962, and a less known but equally risky crisis in 1983 in Europe (which led to the INF Treaty), these American statesmen (and one former Secretary of Defense directly involved in nuclear weapons research, Dr. Perry) realized that reducing the probability of nuclear war was not enough to avoid catastrophe unless the probability is reduced to zero. Rare events happen, and crazy leaders pop up in the strangest places, all too often. Plus accidents happen, radars and computers fail, and third parties can do weird things for perverse reasons. These 'wise men's' words of nuclear restraint fly against a tide of vested interests that make tons of money off the current system today. The weapons businesses and their politicians seldom think ten years ahead much less hundreds of years or millennia. Quarterly profits and next elections usually dominate their very short time horizons compared to civilizations.

So far, we have assumed that readers are familiar with some basics of nuclear weapons history. Now, we will discuss a few details of nuclear weapons history and doctrines in Asia to prepare an argument that Asian leadership is essential if we are to avoid a nuclear catastrophe long-term.

The Asian Nuclear Countries and their Relevant Histories

The nine nations currently known to possess nuclear weapons are Russia, the US, China, France, Great Britain, Pakistan, India, Israel and North Korea. Among these, five are Asian nations. The US and Israel are also very concerned about developments in Asia, which leads to some targeting of capitals and military forces in Asia. France and Britain have smaller arsenals and are mainly concerned about European threats, but they too have global targeting capability.

The nuclear weapons age began in Asia on August 6, 1945, when the first nuclear weapon used in war detonated over Hiroshima, Japan. That killed about 100,000 people promptly, and tens of thousands more over decades to injury and long-term effects of radiation. Three days later a second nuclear attack on Nagasaki effectively ended World War II, and another 100,000+ lives.

That also arguably saved a half-million allied lives who were assembling for a land conquest of Imperial Japan, and uncountable Japanese civilians and soldiers. So allied war goals were achieved, but profound effects on Japan linger to this day. Of particular relevance to nuclear issues is Article 6 of the Japanese Constitution (written by American occupiers) which prohibits both nuclear weapons, and any offensive use of their minimal Japanese Self-Defense forces.

Deterrence advocates justifiably observe that no one has used a nuclear weapon in war since. However, 75 years without a nuclear holocaust is much less than forever. Nuclear deterrence theory actually requires that to be valid. The presence of such weapons has certainly not ended wars. Wars involving the US have killed about 6 million people since then, largely in Korea, Vietnam, Cambodia, Laos and Iraq along with smaller numbers of people in dozens of other formal and informal war zones scattered across the Middle East, Africa, Asia and Latin America.

Most of the world was quite relieved when the worst war in history ended in 1945. However, the shock of those first nuclear detonations also stimulated an arms race among others to acquire some of their own nuclear bombs. Spies did their jobs, [10] and the Soviet Union was next to detonate their own nuclear weapons in tests including the largest weapon ever created, a 50-megaton behemoth (called "Tsar Bomba" in the west) on October 30, 1961. [11]

The US shared its technologies with World War II allies Britain and France. Not long after, now communist China built its own nuclear "deterrent," and the global nuclear arms race was on.

Another side effect (to us) of the sudden end to World War II was division of Korea into communist North and capitalist South. The Korean War of 1950-53 was not, of course, a side effect to Koreans. But it was the first example of nuclear patrons backing down and accepting defeat in a proxy war without using them. The Soviet Union chose not to use their nuclear weapons defending North Korea, even though Chinese allies lost at least 150,000 troops there. [12]

That division persists to this day, with a 4-kilometer Demilitarized Zone (DMZ) separating North and South Korea. Since peace was never formally declared, small hostilities continued between the two countries. [13] Meanwhile the South's economy grew to 40 times larger than communist North Korea's. [14] Insecurity in the North, and uncertainty regarding how far its patrons would go in its defense, finally led to development of nuclear weapons there from 2006-2017 which has frightened much of the rest of East Asia. [15] America noticed, of course, since the US is formally committed to defending both South Korea and Japan from nuclear (or any) attack by adversaries.

Britain, France and China opted for "minimal deterrence" believing that a few hundred nuclear weapons on reliable delivery systems would be enough for deterrence (UK ~ 215, France ~ 300, China 280, in 2018) [16] and that "winning" "limited" nuclear wars is impossible. Some think that phrase is, perhaps, the ultimate oxymoron. The Soviet Union and the US, however, spent vast sums on research into new designs, development, and eventually production of over 30,000 nuclear warheads each. This resulted in a global peak of over 60,000 nuclear warheads in 1985. [17] We created scores of different types associated with hundreds of delivery systems from ICBMs to artillery and "suitcase bombs." [18] Yields ranged from less than one kiloton to over ten megatons on deployed delivery systems. That is a range of over 10,000 fold in explosive power.

India conducted its first nuclear weapons test in 1974, but yielded to global diplomatic pressure and public opinion. Therefore, it did not publically develop an offensive arsenal for many years. India was also winning its occasional conventional wars with Pakistan. [19] This did not please Pakistan's Army, which devoted billions in very scarce resources to close that gap. In May 1998, India conducted a series of five new nuclear weapons tests, followed promptly by nuclear tests in Pakistan. This proved that both had been conducting secret nuclear weapons research programs for decades. A South Asian nuclear arms race was now publicly on. Each rapidly built arsenals exceeding 100 deliverable warheads. Today India has at least 135 deliverable warheads, Pakistan 145, and Pakistan probably builds more new warheads every year than any other nation.

As noted earlier, many intelligence analysts consider this dyad of nuclear-armed adversaries to be the most likely to use nuclear weapons in anger next, because they are so focused on each other, and have such a long history of wars during the last 73 years. [20]

Israel is not an Asian nation, but some of its targets are. Israel probably developed its first, functional nuclear warhead in 1968, but that history is murkier than most because of their refusal to sign the pivotal nuclear Non-Proliferation Treaty (NPT) of 1970. That requires extensive disclosure of nuclear weapons facilities and materials, numbers of weapons, plus international inspections for those outside of the original nuclear club (US, USSR, Britain, France and China).

The International Atomic Energy Agency (IAEA, a part of the United Nations system) is central to those inspection and verification methods that reassure frightened nations. Requiring intrusive verification of nuclear systems is one principle benefit of international arms control measures regardless of whether they result in quantitative reductions or qualitative limitations on weapons.

At least two other currently non-nuclear, Asian nations in addition to Japan should be mentioned because they could become nuclear weapons nations much faster than most know. Either could also become flashpoints for war between major nuclear powers. Those are Taiwan and South Korea. So far, they both rely on security guarantees by the United States and occasional reassurance that our "nuclear umbrella" protects them too. But they worry if we are reliable. Japan also has the technologies required for a very fast "nuclear breakout" if North Korea or China were to threaten it gravely. Japan also has very large quantities of plutonium (a critical, expensive, and hard to acquire element necessary for the larger yield thermonuclear explosives) due to Japan's reprocessing capability, which supports its very large nuclear power industry.

The Special Importance of Northeast Asia and Mongolia in Particular

We have noted how catalytic North Korea could become in this tangled mess of WMDs and threats to use them. Their recent development of both fission and fusion nuclear weapons, and their ongoing development of ever better delivery missiles with ever longer ranges has woken up both near neighbors and superpowers half a world away. But there is another small nation in Northeast Asia which is trying to be catalytic, albeit in a positive, peacemaking kind of way.

That nation is Mongolia, which tries very hard to maintain good relations with all of the relevant parties instead of joining one block or another in exclusive alliances. [21] Surrounded by Russia and China, it simply must maintain good relations with these two nuclear giants. Very early in its young democracy, it recognized that it must also cultivate good relations with some other major power to balance these police-states. The United States was an obvious candidate, and we did indeed help them a lot in the difficult years after the Soviet Union broke up. [22]

Mongolia is special in another way. 114 nations had declared themselves "Nuclear Weapons Free Zones" (NWFZ) through six international treaties that declared some continents to be weapons free (like Africa and South America) and other large areas that included dozens of countries. Stuck between two, huge, nuclear powers Mongolia could not join an area coalition. But visionaries in its new, democratic governments determined to press ahead with a 12-year effort to gain NWFZ status, which was recognized by the United Nations and by many specific nations. As important to the Mongolians were bilateral agreements with all of the main nuclear weapons states (the original five, as recognized in the NPT) to preserve their territorial integrity, and to promise never to transit Mongolia with nuclear weapons or otherwise to abuse their strategic space by placing nuclear arms or any of their delivery enablers on Mongolian territory. One of those great visionaries was Mongolia's Ambassador to the United Nations, J. Enkhsaikhan, who described his (and others) years of labor in a paper presented at a conference on these topics at Mongolia's Foreign Ministry in September, 2019. [23]

I will speculate on a third factor before moving on to China and Japan who are obviously vastly larger and more powerful. Mongolia, while developing rapidly, is still only two generations away from a predominantly nomadic, herdsman culture. Its small population (even today, a maximum of 3 million people live on a vast land where only one percent can be farmed) is intimate with nature. Nature knows that indiscriminate destruction such as "WMD" imply damages the "seventh generation" referred to often in indigenous cultures in the Americas. Therefore, Mongolians do not try to prevail in disputes by brute force, especially if that would mean destruction of the ecosystems that support us all. The spirituality of people with feet firmly on the ground and spirits in blue sky also tend to be more inclusive of others, near or far away. So I dare to speculate that there is a spiritual dimension to Mongolians, which helps.

The economic gorillas of Northeast Asia are obviously China and Japan. One is nuclear armed, and the other is pacifist by constitution if not by history. Both have financial and technical resources that would be sorely needed to implement any agreement to rethink global security on such large scales. As noted earlier, Japan also has a unique moral claim to leadership of any significant drive to change nuclear realities on earth today. And if nuclear China cannot pledge to work toward a nuclear free world, then all the other nuclear states will dig in their heels to obstruct such mammoth change. Therefore, China is essential.

Which brings us to North and South Korea. North Korea is another relatively small nation stuck between behemoths China and Japan. Of course, they are preoccupied with South Korea and its superpower sponsor, the USA. And their current dynastic leader, Kim Jong Un has an especially wicked reputation for killing close relatives and anyone else with insufficient devotion to his especially wicked police-state. But Kim is also young, and has shown that he can rethink current

arrangements in possibly catalytic and revolutionary ways if so inclined. South Korea remembers millennia of common history, and prays for peace. It also has the very large resources necessary to manage reunification if and when that becomes possible.

If Mongolia and newly nuclear North Korea could form one axis of peacemaking, representing the smaller nations of our earth, then perhaps China, Japan and South Korea could form another, an axis of economic giants who recognize that all the money in the world will be worthless if a nuclear war occurs on their lands. Who might start that war would be irrelevant, but we now know that it will probably occur if we wait long enough. Surrounding one's home with huge explosives to "deter" bad people is a formula for long-term pain. This is fertile ground for visionary leaders in all of these five Northeast Asians nations today.

Major Successes and Failures of Nuclear Arms Control

In 2019, the world had about 15,000 usable nuclear warheads. [24] About 14,000 of those were owned by Russia and the USA, with the other thousand scattered among the seven other nuclear weapons nations named here. This reduction from the peak of 60,000 is entirely due to successes in a cluster of nuclear weapons arms control treaties that started with the NPT treaty of 1970.

However, that comprehensive set of restraints is rapidly unraveling today for many reasons. [25] Several treaties dealt with numbers of nuclear warheads and delivery systems deployed by the US and the Soviet Union, later Russia. At least as important as numbers were required systems of verification including inspections. Other treaties prohibit any nuclear weapons in specific areas, like outer space, Antarctica and among countries that oppose the global nuclear arms race.

Therefore, we will list here the most important among those treaties, ranked roughly by time of signature or "entry into force." [26] We will add the most salient strengths or weaknesses of each, and why some failed to gain ratification or even symbolic force of international law.

The Antarctic Treaty, 1961 – This was the earliest, and established the Antarctic content as a place exempted from all military activity, not just nuclear weapons. The goal was to foster scientific collaboration in a place safe for all. This treaty has worked out better than most.

The Partial Test Ban Treaty, 1963 – After radioactive isotopes were discovered in baby's teeth and mother's milk, women complained about testing nuclear weapons in the air, which spreads radiation worldwide. This was remarkably effective, and almost all nuclear tests since then have occurred underground where most of those radioactive isotopes can be better contained.

The Outer Space Treaty, 1967 – This prohibits placement of nuclear weapons in space, and generally bans military activity of any kind in space that threatens the earth below. It has been moderately effective since no known nuclear weapons are there today. But several countries including the USA and China desire other military capabilities in space and there are movements in that direction. Of particular importance is development of weapons to attack satellites. [27]

The nuclear **Non-Proliferation Treaty (NPT), 1970** – "More countries have signed and adhered to the NPT than any other arms limitation and disarmament treaty, a testament to the treaty's value." [28] The basic deal here was that the early nuclear weapons nations would share nuclear power technology with the rest of the world in return for non-nuclear nations choosing not to develop weapons. They would also allow intrusive inspections of reactors and fuel reprocessing facilities to prevent proliferation of weapons technology or materials. However, Article 6 of the NPT also requires the nuclear nations to conduct good faith, ongoing negotiations to eliminate nuclear weapons entirely. Therefore, the most prominent nations not in full compliance with this treaty today are Russia and the USA. [29] Some analysts conclude that it is 'Time to Ditch the NPT' in favor of the more comprehensive 2017 Treaty on Prohibition of Nuclear Weapons.

The Anti-Ballistic Missile Treaty (ABM), 1972 – This treaty only involved the US and the Soviet Union, until the SU disintegrated into Russia and 14 other, independent republics. Its purpose was to limit creation of defenses that could undercut the Mutual Assured Destruction strategy. It worked pretty well at its stated goal. But the US withdrew in 2002 to build new-generation missile defense systems, so Russia also withdrew and the ABM treaty is now defunct.

The Seabed Arms Control Treaty, 1972 – This prohibited placement of nuclear weapons on or under seabeds across the world. One of many nightmare scenarios thus averted was creation of tsunami waves by nuclear detonations underwater that could travel thousands of kilometers and harm innocents far removed from the parties to a conflict.

SALT I, 1972 – This was the first of a series of bilateral agreements between the US and the Soviet Union (later Russia). The acronym stands for "Strategic Arms Limitation Treaty." This established strict inspection and verification measures for the two "superpowers" and called for continuing negotiations. [30] That worked pretty well, resulting in a SALT II, START, SORT, and finally New START each of which set lower limits on both deployed warheads and associated delivery systems (like ICBM's, sub-launched ballistic missiles, bombers and cruise missiles). Unfortunately, this series of treaties requires ongoing ratification to remain in force, and no talks have been scheduled for several years to continue this process. Another weakness is important. China has never signed nor ratified any of these bilateral treaties, and does not abide by some other treaties like INF. A recurring theme in weak arms control systems is the failure of the most important nations, the ones who maintain strategic nuclear arsenals, to sign, ratify or obey them.

The Intermediate-Range Nuclear Forces Treaty (INF), 1988 – This bilateral treaty banned delivery systems for nuclear weapons with ranges between 500 – 5,500 kilometers. It resulted from a lot of talk about winning "limited nuclear wars" in the early 1980's typically to be waged over Europe. Talk was followed by deployment of many types of such missiles by the Soviet Union and the USA … in Europe. Europe was not generally pleased, but this treaty was progress. Regrettably, Russia was later accused of developing and deploying a non-compliant, ground based cruise missile and the US declared its intention to withdraw from the treaty on October 20, 2018. [31] This decision was finalized on August 2, 2019 [32],[33]. Then-president Donald Trump also complained that China never signed this treaty. True, and getting China to do so could be complicated by conflicts with India and Pakistan. But if China wanted to lead a new effort on nuclear arms control, resurrecting the INF or joining a new one would be a good place to start.

The Comprehensive Nuclear Test Ban Treaty (CTBT), (1996) – This was adopted by the UN General Assembly in 1996 and looked like a great deal for the world, for a while. It would have banned ALL nuclear explosions (underground as well as in the atmosphere or in the oceans) and established a large, international system of test detection technologies. [34] A true and total ban on testing would, over time, reduce everyone's confidence in the old nuclear arsenals and reduce the probability of "first strikes." Unfortunately, the CTBT also required signatures and ratification by all nuclear nations known at that time and by many states that could make them in the future. Then-US President Clinton signed this treaty in 1999, but a hostile US Senate declined to ratify it. This doomed the project although some detection systems have been deployed, and most nations refrain from explosive nuclear testing to this day (North Korea was the latest exception, but they have not tested for a couple of years now). As of 2016, eight "Annex 2" nations had not ratified the treaty including China, and three nuclear nations have not even signed it by 2019 (India, North Korea, and Pakistan). Therefore, China could lead here too, if it wished to.

Regional Nuclear Weapons-Free Zone Treaties, (1961 to 2009) – There are currently seven nuclear weapons-free zones that cover a remarkable area, including Antarctica, Latin America and the Caribbean, the South Pacific, Southeast Asia, Africa, Central Asia and Mongolia. These represent efforts by the many non-nuclear weapons countries to pressure the nuclear nations to stop threatening the entire world with their doomsday arsenals. The central conundrum of this system is exposed again. So long as most nations that have nuclear arsenals will not agree to constrain them, the half-life of human civilization is short, and doomsday clocks tick on.

Treaty on the Prohibition of Nuclear Weapons (2017) – Recognizing these dilemmas and led by smaller countries, the UN General Assembly voted for a truly comprehensive ban on nuclear weapons. The vote on July 7, 2017 was 122 in favor, 1 against, and 1 abstention, with 69 nations not voting, among them all of the nuclear weapons states and all NATO members except the Netherlands. [35] Therefore, despite great efforts and high aspirations on behalf of most of human civilization, the nuclear weapons arms control treaties have been only partly successful.

Why Asia Must Lead at this Time

Today the nuclear arms race is more qualitative than quantitative, but it still moves in the wrong direction if survival of civilization is a primary goal. Asia must lead nuclear disarmament efforts today because America will not, Europe cannot, and both Russia and Israel feel surrounded by mortal enemies. Asia must lead because it includes half of the declared nuclear powers (China, India, Pakistan and North Korea) while Russia is both European and Asian. And Asia should lead, because it includes Japan, the only country to suffer the full horror of a nuclear attack.

Mongolia is leading today by hosting a special, APHA/ISCSC [36] conference on nuclear and other issues that challenge survival of our civilizations. Like so many other neutral countries, Mongolia lies in between large nuclear powers that could utterly devastate it should the gorillas lose their minds and wage a nuclear war over Mongolia's territory. Thus, it appears that Mongolia has the courage to point out how bad this system is for all of human civilization in the

long run. It is also one of the few countries on earth that has good relations with all of the most relevant powers in Northeast Asia.

The belief among some people and nations that a few countries can hold the rest of humankind hostage to nuclear terror **FOREVER** without anyone ever using those weapons is an illusion. Unfortunately, powerful forces that profit from nuclear weapons systems exert daily pressure on governments to block rethinking the fatal assumptions that underlie nuclear deterrence theory.

Therefore, steps should be taken in international and national laws to prohibit nuclear weapons among civilized nations, similar to the bans on biological and chemical weapons. Those have worked pretty well. Of course, "pretty well" is not perfect, but perfection has never been a realistic goal in either law or statecraft. Laws against murder are never perfect, yet every nation has them. Norms matter. And "pretty well" is much better than no restraints at all. For example, almost no one has been killed by biological weapons since the biological weapons convention was established. Barbarians threw plague infested bodies over castle walls, and smallpox infected blankets to Native Americans they wanted dead. [37],[38] The modern biological weapons convention is not perfect, but we are all safer because of it. We also have much better disease surveillance, research, and response capabilities today, because of that legal taboo and its enabling institutions.

One can follow leads by ICAN (the International Committee to Abolish Nuclear weapons) co-winner of the 2017 Nobel Peace Prize, and by the United Nations to implement the goal of eliminating nuclear weapons. However, one can also lead. Therefore, I urge the Asian nations to consider their special abilities to do so now in the service of humanity at large. And I thank the people of Mongolia and their Foreign Ministry for leading today in many ways.

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[1] Reuters, "EU is extremely worried about future of INF nuclear treaty," November 20, 2018, at: https://mobile.reuters.com/video/2018/11/20/eu-extremely-worried-about-future-of-inf?videoId=484149671&videoChannel=117759 .

[2] Woody, Christopher, "Russia reportedly warned Mattis it could use nuclear weapons in Europe, and it made him see Moscow as an 'existential threat' to the US," in Business Insider, September 14, 2018, accessible at: https://www.businessinsider.com/russia-warned-mattis-it-could-use-tactical-nuclear-weapons-baltic-war-2018-9 .

[3] "Nuclear Winter" is a theoretical effect of the burning of many cities in a large, or general nuclear war. All those cities with petroleum products and other materials burning at once could create clouds thick and persistent enough to compromise agriculture thousands of miles away. Since this has never been observed directly and no one wants to test it, nuclear winter remains a theory today. More writing on that can be found at the Encyclopaedia Britannica: https://www.britannica.com/science/nuclear-winter .

[4] Like the Koreas and Vietnam at least, and maybe Cambodia and Laos if all resulting dead were countable.

[5] At least four and possibly more Iranian scientists associated with their nuclear research program were assassinated by agents of Israel between 2010 and 2012. More data on that can be found in Ronen Bergman's incomparable book on targeted killings by Israel, Rise and Kill First: The Secret History of Israel's Targeted Assassinations, Random House, 2018, or at Wikipedia: https://en.wikipedia.org/wiki/Assassination_of_Iranian_nuclear_scientists .

[6] Minz, Alex, Understanding Foreign Policy Decision Making, specifically Chapter 4 on "The Rational Actor Model" where he discusses pros and cons of this critical assumption about behaviors of state leaders, London, UK: Cambridge University Press, 2010.

[7] One of the earliest and most enthusiastic rationalists for nuclear deterrence theory, Herman Kahn, was quoted in the most recent US guidance on "Nuclear Operations," in Joint Publication 3-72 by our Department of Defense, as the epigraph to Chapter 3 on "Planning and Targeting." Kahn wrote: "My **guess** is that nuclear weapons will be used sometime in the next hundred years, but that their use is much more likely to be small and limited than widespread and unconstrained." This document was briefly available on the DOD's website, then withdrawn, but it can be accessed at: https://fas.org/irp/doddir/dod/jp3_72.pdf courtesy of the Federation of American Scientists.

[8] A detailed description of Poisson Distributions can be found at: https://www.umass.edu/wsp/resources/poisson/ .

[9] George P. Shultz, William J. Perry, Henry A. Kissinger, and Sam Nunn, "A World Free of Nuclear Weapons," in The Wall Street Journal, January 4, 2007, accessible at: https://www.wsj.com/articles/SB116787515251566636 . Two of these authors were former Secretaries of State, one a Secretary of Defense and Ph.D. nuclear physicist, and Sam Nunn was a long-serving US Senator who co-authored the "Nunn-Lugar Act" that helped the USSR reduce its nuclear vulnerabilities when it disintegrated into Russia and 14 other independent republics. The point is that even many architects of the nuclear weapons age developed deep misgivings about its long-term wisdom. A thorough review of highly informed sceptics would have to include Albert Einstein and Robert Oppenheimer among others.
[10] Klaus Fuchs is the best known, and possibly the most important spy to leak nuclear secrets to the Soviet Union during the 1950's, but a longer list is available at Wikipedia, at: https://en.wikipedia.org/wiki/Atomic_spies .
[11] "Tsar Bomba" is described in a history page of the Atomic Heritage foundation, and is accessible at: https://www.atomicheritage.org/history/tsar-bomba . "50 megatons" yield means the equivalent explosive force of 50 million tons of TNT detonated simultaneously.
[12] Korean War, section on Chinese casualties, Wikipedia at: https://en.wikipedia.org/wiki/Korean_War#Casualties .
[13] Rogers, Simon, "North Korea vs. South Korea: Mapping every incident from 1958 to 2013," in The Guardian, UK, April 11, 2013, accessible at: https://www.theguardian.com/news/datablog/2010/nov/23/north-korea-yeonpyeong-island-incidents-map .
[14] Bajpai, Prableen, "North Korean vs. South Korean Economies: What's the Difference?" in Investopedia, April 14, 2019, at https://www.investopedia.com/articles/forex/040515/north-korean-vs-south-korean-economies.asp .
[15] "North Korea Nuclear Timeline Fast Facts," in CNN Library, May 6, 2019, accessible at: https://www.cnn.com/2013/10/29/world/asia/north-korea-nuclear-timeline---fast-facts/index.html
[16] "2018 Estimated Global Nuclear Warhead Inventories," Arms Control Association fact sheet, accessible at: https://www.armscontrol.org/factsheets/Nuclearweaponswhohaswhat .
[17] "Historical nuclear weapons stockpiles and nuclear tests by country," from Wikipedia, accessible at: https://en.wikipedia.org/wiki/Historical_nuclear_weapons_stockpiles_and_nuclear_tests_by_country . The 60,000 warheads figure is a minimal estimate. I have often seen references that claim the real peak of nuclear weapons was over 70,000. Whether one includes "tactical" with "strategic" weapons, deployed or "in reserve" are parts of this discrepancy, along with continuing secrecy by nations like Israel. The real total number is practically insignificant, because any of those nuclear inventories could easily destroy the entire earth (for humans) dozens of times over.
[18] The myriad of nuclear weapons designs from that era included even "man-portable nuclear demolitions" (the US term) and "suitcase bombs" (a Soviet term for warheads designed to look like suitcases) for smuggling to targets.
[19] Indo-Pakistani wars and conflicts, in Wikipedia is accessible at: https://en.wikipedia.org/wiki/Indo-Pakistani_wars_and_conflicts . These include wars of 1947 (original partition after WW II), 1965 (when Pakistan lost control of what is now Bangladesh) 1971, and 1999 (the last two were about issues of who controls which parts of Kashmir, a never-ending dispute about which Kashmiri's seldom get any voice at all). The stability of this conflict dyad was further reduced when India's PM Modi revoked the special, semi-autonomous status of Indian controlled Kashmir on August 5, 2019.
[20] Waqar, Annie, "Nuclear War between India and Pakistan? An expert assesses the risk," in The Conversation, March 6, 2019, accessible at: http://theconversation.com/nuclear-war-between-india-and-pakistan-an-expert-assesses-the-risk-112892 .
[21] Almost all small nations try to maintain good relations with large neighbors, but Mongolia is probably unique in its devotion to that goal regardless of ideological, religious, and economic divisions. North Korea's list of friends, by contrast, is quite short. But Mongolia is undoubtedly among them, and it has invested considerable diplomatic effort in trying to broker better relations between North and South Korea in particular.
[22] Campi, Alicia, Mongolia's Foreign Policy: Navigating a Changing World, (especially the section on the Donor Era) Boulder, CO: Lynne Renner Publishers, 2019. At time of writing this is the definitive English-language work on Mongolia's foreign policy and is thick with detailed economic data on the post-communist period and the acts of Presidents and Foreign Ministers, each of whom she knows or knew personally.
[23] Enkhsaikhan, J., "Denuclearizing the Korean peninsula: a broader approach is needed," presented at a conference of the Asian Political History Association (APHA) on, "Challenges Confronting Asia Today: Nuclear Proliferation, Environment, Political-Economic and Civilizational," in Ulaanbaatar, Mongolia, September 26 – 27, 2019. It was not their first attempt. As Dr. Enkhsaikhan noted: "In the mid-1990's, a proposal was made to establish such a zone (a NWFZ) which would include two Koreas, and Japan, to which the US, Russia and China would provide security assurances. Due to lack of trust it was a non-starter."
[24] These figures do not include undeployed strategic warheads, warheads waiting for disposal or maintenance, or the many tactical nuclear warheads that both Russia and the USA maintain. Israel almost certainly has some also, including "suitcase bombs" but I will not guess numbers, while China was estimated to have about 150 "tactical" nuclear weapons in 2015 (by the Nuclear Threat Initiative), https://www.nti.org/learn/countries/china/nuclear/ .

[25] Thränert, Oliver, "New Challenges in Nuclear Arms Control," in CSS Analysis in Security Policy, No. 232, October 2018, accessible at: https://css.ethz.ch/content/dam/ethz/special-interest/gess/cis/center-for-securities-studies/pdfs/CSSAnalyse232-EN.pdf .
[26] The dates of international arms control treaties are often complicated by a date of signature, followed by a date when the treaty "entered into force," which often requires ratification by some number of relevant nations. For simplicity, the single dates on this list will be those most commonly used in citations about that treaty.
[27] David, Leonard, "China's Anti-Satellite Test: Worrisome Debris Cloud Circles Earth," in Space.com at https://www.space.com/3415-china-anti-satellite-test-worrisome-debris-cloud-circles-earth.html . It bears emphasis here that while China stopped "destructive" testing in orbit due to global outcry regarding 900+ fragments resulting from their first kinetic test against their own satellite, they have not stopped testing nor development of their anti-satellite weapons. Neither has the USA or Russia. We have all just become more careful about not leaving vast debris clouds that could wipe out the international space station or any number of other items in low earth orbit.
[28] United Nations Office for Disarmament Affairs, Treaty on the Non-Proliferation of Nuclear Weapons (NPT) entry; my first sentence here is a quote from one of their authors, available at: https://www.un.org/disarmament/wmd/nuclear/npt/
[29] Pretorius, Joelien, and Tom Sauer, "Is it time to ditch the NPT?" in the Bulletin of the Atomic Scientists, September 6, 2019, accessible at: https://thebulletin.org/2019/09/is-it-time-to-ditch-the-npt/?utm_source=Newsletter&utm_medium=Email&utm_campaign=Newsletter09092019&utm_content=NuclearRisk_DitchNPT_09062019 .
[30] G. John, "Examining SALT Violations and the Problems of Verification," published by The Heritage Foundation, accessible at: https://www.heritage.org/defense/report/examining-salt-violations-and-the-problems-verification .
[31] Nichols, Tom, "Mourning the INF Treaty: The US is not better for withdrawing," in Foreign Affairs, March 4, 2019, accessible at: https://www.foreignaffairs.com/articles/2019-03-04/mourning-inf-treaty .
[32] Pompeo, Michael R., "U.S. Withdrawal from the INF Treaty on August 2, 2019," press release of the U.S. Department of State, accessible at: https://www.state.gov/u-s-withdrawal-from-the-inf-treaty-on-august-2-2019/ .
[33] It bears mention that "Two weeks after abrogating the INF Treaty, the US military ground launched a Tomahawk cruise missile on 18 August, which flew more than 500 km." This quote comes from Scott Howe, US Department of Defense, cited in Jane's Defence Weekly, Vol. 56, Issue 35, 28 August, 2019, in their cover story for that week. The point is observing how quickly nuclear nations that want more, new, attack capabilities can create them. It is fear of such 'breakout' capabilities that fuels the nuclear arms race cycle, which must be escaped before it detonates.
[34] "How the International Monitoring System Works," a paper of the Comprehensive Nuclear Test Ban Treaty Organization, accessible at: https://www.ctbto.org/verification-regime/ .
[35] United Nations Office for Disarmament Affairs (UNDOA), overview of the Treaty on the Prohibition of Nuclear Weapons, accessible at: https://www.un.org/disarmament/wmd/nuclear/tpnw/ .
[36] APHA stands for the Asian Political History Association, and ISCSC is the International Society for Comparative Study of Civilizations. These two academic groups partnered with the Mongolian Foreign Ministry, the Blue Banner Society and Clarewood University in the USA to co-sponsor a special conference in Ulaanbaatar, Mongolia from September 26-28, 2019. It had three main subthemes: nuclear nonproliferation, the environment, and civilizations. It was here that we discovered the exceptional commitment of Mongolia to peaceful relations with everyone.
[37] Weatherford, Jack, Genghis Khan and the Making of the Modern World, Crown publishers, 2004. The greatest Khan was probably not the first to use plague against enemies, but his use of biological weapons and of calculated terror as a tool of conquest are well documented in this book among others.
[38] Jeffrey Amherst was commanding general of British forces in North America during the final battles of the French and Indian War of 1754-1763. Amherst Massachusetts and Amherst College were both named after him. But his reputation is now tarnished by accusations of biological warfare against native populations using blankets from smallpox wards. The University of Massachusetts maintains an academic record of this subject, "Jeffrey Amherst and Smallpox Blankets," which can be accessed at: https://www.umass.edu/legal/derrico/amherst/lord_jeff.html .

-- end at November 23, 2019, d6 for transmission to Dr. Campi --